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Conference Abstract

Collectively Working towards Plant-Pollinator Interactions Data Interoperability and Reuse: Lessons Learned from the WorldFAIR Project

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Abstract

The WorldFAIR project worked with eleven case studies to advance the implementation of the FAIR data principles (Findable, Accessible, Interoperable, and Reusable; Wilkinson et al. 2016). The Case Study on Agricultural Biodiversity (Drucker et al. 2022) addressed the challenges of advancing interoperability and mobilizing plant-pollinator interaction data for reuse. In the first phase of the project we performed a landscape analysis and found that a significant amount of data on plant-pollinator interaction was available as supplementary files of research articles, in a range of formats such as PDFs, Excel® spreadsheets, and text files. The diversity of approaches and the lack of appropriate data vocabularies led to confusion, information loss, and the need for complex data interpretation and transformation.

In the second phase of the project, we performed six studies to adopt standards recommended in the first phase. Our approach for plant-pollinator data standardization was based on Darwin Core (Darwin Core Task Group 2009) and Ecological Data Language (EML, Jones et al. 2019), in conjunction with a data model and vocabulary

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proposed by the Brazilian Network of Plant-Pollinator Interactions (REBIPP). The studies underwent a process of “FAIRification” (i.e., transforming data into a format that adheres to the FAIR data principles) using the Global Biotic Interactions (GloBI, Poelen et al. 2014) platform. Two studies also explored the publishing model for Biotic Interactions as part of the GBIF New Data Model.

The standardization strategy was successful and increased the interoperability of plant-pollinator interaction data, resulting in a process that allows tracking the provenance of the data, as well as facilitates the reuse of datasets (Drucker et al. 2024). This effort led to the development of "FAIR best practices" and guidelines for sharing plant-pollinator interaction data, as well as a FAIR assessment tool designed to help researchers and institutions evaluate adherence to the FAIR principles (Drucker et al. 2024). A tutorial to standardize plant-pollinator datasets (Gonzalez-Vaquero et al. 2024) and a cookbook with guidelines and recommendations for publishing agriculture-related plant-pollinator data (Salim et al. 2024) were developed to help different actors standardize plant-pollinator interaction data in accordance with the FAIR principles.

Moving from diverse approaches and siloed initiatives to widely available FAIR plant-pollination interaction data for scientists and decision-makers will enable the development of integrative studies that enhance our understanding of species biology, behavior, ecology, phenology, and evolution.

Keywords

FAIR, agriculture, ecosystem services, community, data sharing

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Conflicts of interest

The authors have declared that no competing interests exist.

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